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the 1990s, the number of people in the UK who are employed in the public sector has increased by 1.5 million, from 2.5 million in 1980 to 4 million in 1995. The public sector has become a major employer in the UK, and its growth has been a major factor in the overall growth of the economy.

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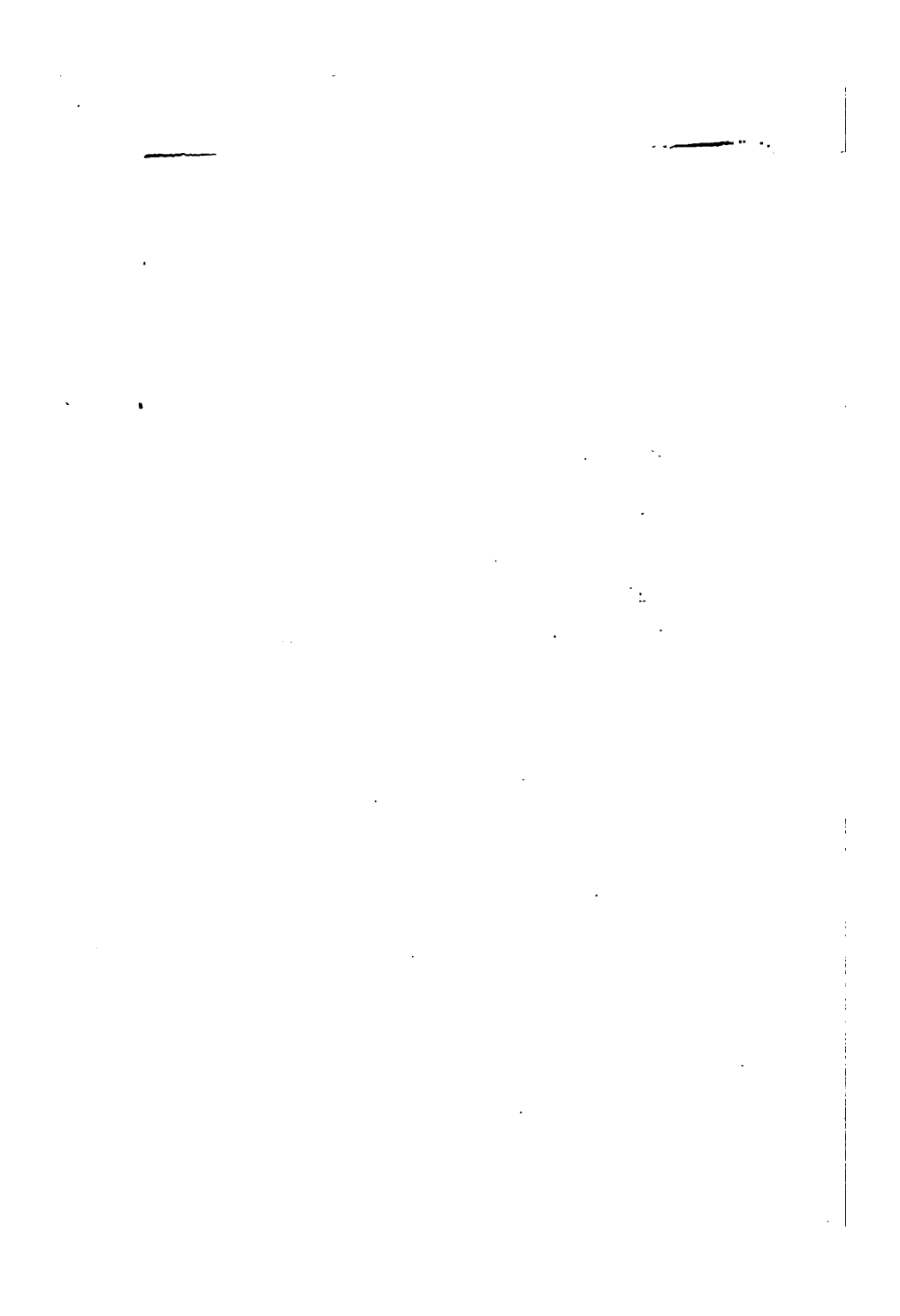
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*Some parts of this little book were delivered as a lecture
at the Philosophical Institution, Edinburgh.*

THE
FIVE GATEWAYS OF KNOWLEDGE.

THE ivory palace of the skull, which is the central abode of the soul, although it dwells in the whole body, opens to the outer world four gateways, by which its influences may enter; and a fifth, whose alleys are innumerable, unfolds its thousand doors on the surface of every limb. These gateways,—which we otherwise name the Organs of the Senses, and call in our mother speech, the Eye, the Ear, the Nose, the Mouth, and the Skin,—are instruments by which we see, and hear, and smell, and taste, and touch: at once loopholes through which the spirit gazes

out upon the world, and the world gazes in upon the spirit; porches which the longing unsatisfied soul would often gladly make wider, that beautiful material nature might come into it more fully and freely; and fenced doors, which the sated and dissatisfied spirit would, if it had the power, often shut and bar altogether.

I will try to picture each of those living inlets of learning, without stopping at present to inquire how much the soul knows independent of the senses, and how far it controls them. The soul and its servants were not intended to be at war with each other, and the better the wise king is served, the more kingly will he appear. We have a strange fear of our bodies, and are ever speaking as if we could right the spirit only by wronging the flesh, and could best sharpen our intellects by blunting our senses. But our souls would be only gainers by the perfection of our bodies were they wisely dealt

with ; and for every human being we should aim at securing, so far as they can be attained, an eye as keen and piercing as that of the eagle ; an ear as sensitive to the faintest sound as that of the hare ; a nostril as far-scenting as that of the wild deer ; a tongue as delicate as that of the butterfly ; and a touch as acute as that of the spider.

No man ever was so endowed, and no one ever will be ; but all come infinitely short of what they should achieve were they to make their senses what they might be made. The old have outlived their opportunity, and the deceased never had it ; but the young, who have still an undimmed eye, an undulled ear, and a soft hand ; an unblunted nostril, and a tongue which tastes with relish the plainest fare, can so cultivate their senses as to make the narrow ring which for the old and the infirm encircles things sensible, widen for them into an almost limitless horizon.

There are three points of view from which we are to look at the senses, viz.—

1st. As ministers to the merely animal wants of the Body.

2nd. As ministers to the cultivation of the Intellect; and,

3rd. As ministers to the gratification of the perception of Beauty and its opposite.

It is to the two last, the Intellectual and Æsthetical offices of the senses, I am mainly to refer, including that relation to our Moral Instincts which flows from the triple Corporeal, Intellectual, and Æsthetical function which is exercised by each sense.

I.

THE EYE.

First, then, of the Eye. It is one of the prerogatives of man to have eyes. Many living creatures have none. The eyes which others—for example, the star-fishes—have, are mere sensitive points, dimly conscious of light and darkness, but not perceiving colours, or distinguishing forms. The eyes of flies are hard, horny lanterns which cannot be moved about like our restless eyes, but look always in the same direction; whilst spiders, having many more things to look after than one pair of such lanterns will suffice for, have eyes stuck all over their heads, and can watch a trapped gnat with one eye, and peer through a hole in their webs

with another. We are much better provided for than any of these creatures, although we have but two small orbs to see with. Think, first, how beautiful the human eye is, excelling in beauty the eye of every creature. The eyes of many of the lower animals are doubtless very beautiful. You must have admired the bold, fierce, bright eye of the eagle, the large gentle brown eye of the ox, the treacherous green eye of the cat, waxing and waning like the moon, as the sun shines upon it or deserts it; the pert eye of the sparrow, the sly eye of the fox, the peering little bead of black enamel in the mouse's head, the gem-like eye which redeems the toad from ugliness; and the intelligent, affectionate expression which looks out from the human-like eye of the horse and the dog. There are these and the eyes of many other animals full of beauty; there are none, indeed, which are not beautiful; but there is a glory which excelleth in the eye of man. We realize this fully, only

when we gaze into the faces of those we love. It is their eyes we look at when we are near them, and recall when we are far away. The face is a blank without the eye; and the eye seems to concentrate every feature in itself. It is the eye that smiles, not the lips; it is the eye that listens, not the ear; it that frowns, not the brow; it that mourns, not the voice. Every sense and every faculty seems to flow towards it, and find expression through it, nay, to be lost in it; for all must at times have felt as if the eye of another was not his, but he; as if it had not merely a life, but also a personality of its own; as if it was not only a living thing, but also a thinking being.

But apart from this source of beauty, in which man's eye must excel that of all other creatures, as much as his spirit excels in endowments theirs; it is in itself, even when life has departed from it, and the soul no longer looks through its window, a beautiful and a very

wonderful thing. Its beauty is, perhaps, most apparent in the eye of an infant, which, if you please, we shall suppose not dead, but only asleep with its eyes wide open. How large and round they are; how pure and pearly the white is, with but one blue vein or two marbling its surface; how beautiful the rainbow ring, opening its mottled circle wide to the light! How sharply defined the pupil, so black and yet so clear, that you look into it as into some deep dark well, and see a little face look back at you, which you forget is your own, whilst you rejoice that the days are not yet come for those infant eyes, when "they that look out of the windows shall be darkened!" And then, the soft pink curtains which we call eyelids, with their long silken fringes of eyelashes, and the unshed tears bathing and brightening all! How exquisite the whole! How precious in the sight of God must those little orbs be, when He has bestowed upon them so much beauty!

But apart altogether from that beauty which delights the painter, the human eye is a wondrous construction. Let us glance for a moment at its wonderfulness. It is essentially a hollow globe, or small spherical chamber. There is no human chamber like it in form, unless we include among human dwelling-places the great hollow balls which surmount the Cathedral or Basilica Domes of St. Peter and St. Paul. The eye is such a ball: the larger part of it, which we do not see when we look in each other's faces, forms the white of the eye, and consists of a strong, thick, tough membrane, something like parchment, but more pliable. This forms the outer wall, as it were, of the chamber of the eye; it may be compared to the cup of an acorn, or to a still more familiar thing, an egg-cup, or to a round wine-glass with a narrow stem. It is strong, so that it cannot easily be injured; thick, so that light cannot pass through it; and round, so that it can be moved about in

every direction, and let us see much better on all sides with a single pair of eyes than the spider can with its host of them.

In the front of the eye is a clear, transparent window, exactly like the glass of a watch. If you look at a face sideways, you see it projecting with a bent surface like a bow-window, and may observe its perfect transparency. The eyelids, which I have formerly spoken of as a curtain, may perhaps be better compared to a pair of outside shutters for this window, which are put up when we go to sleep, and taken down when we awake. But these shutters are not useless or merely ornamental through the day. Every moment they are rising and falling, or, as we say, winking. We do this so unceasingly, that we forget that we do it at all; but the object of this unconscious winking is a very important one. An outside window soon gets soiled and dirty, and a careful shopkeeper cleans his windows every morning. But our eye-windows must

never have so much as a speck or spot upon them, and the winking eyelid is the busy apprentice who, not once a day, but all the day, keeps the living glass clean; so that, after all, we are little worse off than the fishes, who bathe their eyes and wash their faces every moment.

Behind this ever-clean window, and at some distance from it, hangs that beautiful circular curtain which forms the coloured part of the eye, and in the centre of which is the pupil. It is named the Iris, which is only another name for the Rainbow; for though we speak of eyes as simply blue, or grey, or black, because they have one prevailing tint, we cannot fail to notice that the ring of the eye is always variously mottled, and flecked or streaked with colours as the rainbow is. This Rainbow-curtain, or Iris, answers the same purpose which a Venetian blind does. Like it, it can be opened and closed at intervals, and like it, it never is closed altogether; but it is a far more wonderful piece of

mechanism than a Venetian blind, and it opens and closes in a different way.

There is nothing this Iris so much resembles, both in shape and in mode of action, as that much-loved flower, the daisy. The name signifies literally Day's-eye: the flower which opens its eye to the day, or when the day dawns. Shakespeare, who saw all analogies, referring to the similar action of the marigold, in the morning song in *Cymbeline*, tells how

"Winking Mary-buds begin
To ope their golden eyes."

The Ettrick Shepherd embodies the same analogy in an evening song:

"When the blewart * bears a pearl,
And the daisy turns a pea,
And the bonnie lucken-gowan
Has fauldit up her e'e."

The daisy and the iris agree in this, that their opening and closing are determined by their

* Speedwell (*Veronica Chamædrys*).

exposure to light or darkness ; but they differ in this, that the daisy opens widest when the sun is at its height, and shuts altogether when the sun goes down : whilst the iris opens widest in utter darkness, and closes so as to make the pupil a mere black point when sunshine falls upon it.

If we wish to observe this in our own eyes, we need only close them for a little while before a looking-glass, so that the dropped eyelids may shut out the day, when, like shy night-birds, the living circles will stretch outwards ; and the pupil of the eye, like a hole which the sun is melting in the ice, will quickly widen into a deep clear pool. If now we open our eyes, we see the rainbow-rings contract as the light falls upon them, and the dark pupil rapidly narrow, like the well-head of a spring almost sealed by the frost. But probably all have seen the movement I am describing, in the eyes of a cat, where the change is more conspicuous than in

our own eyes ; and have noticed the broad iris spread out in twilight, till the look, usually so suspicious, softened into a mild glance ; whilst when Pussy is basking in the sun, as she dearly loves to do, she shows between her frequent winkings only a narrow slit for a pupil, like the chink of a shutter, or the space between the spars of a lattice-blind.

The endless motions of this living curtain, which, like the unresting sea, is ever changing its aspect, have for their object the regulation of the flow of light into the eye. When the permitted number of rays have passed through the guarded entrance, or pupil, they traverse certain crystal-like structures, which are now to be described.

Behind the iris is a lens, as opticians call it, or magnifying-glass. We are most familiar with this portion of the eye, as it occurs in fishes, looking in the recently-caught creature like a small ball of glass, and changing into what

resembles a ball of chalk, when the fish is boiled. This lens is inclosed in a transparent covering, which is so united at its edges to the walls of the eye that it stretches like a piece of crystal between them; and in front of it, filling the space dividing the lens from the watch-glass-like window, is a clear transparent liquid like water, in which the iris floats. The lens is, further, set like the jewel-stone of a ring, in what looks, when seen detached, like a larger sphere of crystal; but which in reality is a translucent liquid contained in an equally translucent membrane, so that the greater part of the eye is occupied with fluid: and the chamber, after all, which it most resembles, is that of a diving-bell full of water. Lastly, all the back part of the eye has spread over its inside surface, first a fine white membrane, resembling cambric or tissue paper, and behind that a dark curtain; so that it resembles a room with black cloth hung next to the wall, and a white muslin curtain spread over the

cloth. This curtain or Retina, seen alone, is like a flower-cup, such as that of a white lily, and like it ends in a stem, which anatomists name the Optic Nerve: the stem in its turn, after passing through the black curtain, is planted in the brain, and is in living connexion with it.

Altogether, then, our eye is a chamber shaped like a globe, having one large window provided with shutters outside, and with a self-adjusting blind within. Otherwise it is filled with a glassy liquid, and has two wall-papers, or curtains, one white and the other black.

How small this eye-chamber is, we all know; but it is large enough. A single tent sufficed to lodge Napoleon; and Nelson guided the fleets of England from one little cabin. And so it is with the eye: it is set apart for the reception of one guest, whose name is Light, but also Legion; and as the privileged entrant counsels, the great arms and limbs of the body are set in motion.

Within our eyes, at every instant, a picture of the outer world is painted by the pencil of the Sun on the white curtain at the back of the eye ; and when it has impressed us for a moment, the black curtain absorbs and blots out the picture, and the sun paints a new one, which in its turn is blotted out, and so the process proceeds all the day long. What a strange thing this is ! We speak of seeing things held before our eyes, as if the things themselves pressed in upon us, and thrust themselves into the presence of our spirits. But it is not so ; you no more, any one of you, see my face at this moment, than you ever saw your own. You have looked betimes into a mirror, and seen a something beautiful or otherwise, which you have regarded as your face. Yet it was but the reflection from a piece of glass you saw ; and whether the glass dealt fairly with you or not, you cannot tell ; but this is certain—your own face you never beheld. And as little do you see mine : some hundred

portraits of me, no two the same, are at this moment hanging, one on the back wall of each of your eye-chambers. It is these portraits you see, not me; and I see none of you, but only certain likenesses, two for each of you, a right eye portrait, and a left eye portrait, both very hasty and withal inaccurate sketches. And so it is with the whole visible world. It is far off from us, when it seems nearest. Darkness abolishes it altogether. The mid-day sun but interprets it; and we know it not in the original, but only in translation.

Face to face we shall never meet this visible world, or gaze eye to eye upon it. We know only its picture, and cannot tell whether that is faithful or not; but it cannot be altogether faithless, and we must accept it, as we do the transmitted portraits of relatives we have never seen, or the sculptured heads of men who died ages before us. On those we gaze, not distrusting them, yet not altogether confiding in them;

and we must treat the outward world in the same way.

What a strange interest thus attaches to that little darkened chamber of the eye! Into it the sun and the stars, the earth and the ocean, the glory and the terror of the universe, enter upon the wings of light, and demand audience of the soul. And from its mysterious abiding-place the soul comes forth, and in twilight they commune together. No one but HE who made them can gaze upon the unveiled majesty of created things; we could not look upon them and live; and therefore it is that here we see all things "through (or rather in) a glass darkly;" and are permitted only to gaze upon their shadows in one small dimly-lighted chamber.

But shadows as they are, projected upon the brain, and left for the spirit to interpret, and differing, as doubtless they often do, as much from the realities which they represent, as the rainbow—although it is the sun's picture of itself

—differs from the sun, yet perhaps, like the rainbow, they are not seldom more beautiful than the objects which produce them: and whether or not, these shadows are for us, ambassadors from the material world, bringing with them credentials which we cannot call in question, and revealing all that the Powers of Nature, of which they are the Viceroys, choose to tell us. We cannot, therefore, but welcome them as visitants from another world, who may deceive us if they are so minded, but only by so acting that we shall not discover the deceit. An undiscovered deceit, however, is at worst a mystery, and an unsuspected deceit is in effect a truth; and by no logic can we cheat ourselves into discrediting the shadowy figures, which within the amphitheatre of each eyeball repeat in exquisite pantomime their allotted fifth part of the Drama of the Universe.

There is nothing for it, and let us be thankful for that, but with child-like faith and adoring

wonder to welcome every light-born messenger who visits our eyes, as one who comes of his own free-will, not of our compulsion; not to take, but to give; not to give once, but again, and most largely to him who uses best what already has been given; not to deceive or distress, but to instruct and delight us; to show us the beauty of Nature, and teach us the wisdom of God.

What reverence thus attaches to every living eye! What memories belong to it! We preserve from destruction human buildings, or even single chambers, because some one great event happened within their walls, or some solitary noble of our race dwelt in them. John Knox read his Bible in such a room; and Martin Luther threw his inkstand at an evil spirit in such another; Mary Queen of Scots wept over her breviary in a third, Galileo was tortured in a fourth, Isaac Newton tracked the stars from a fifth, and Shakespeare laid him down to die in

a sixth ; and therefore we preserve them,—and how justly!—and go long journeys to visit places so sacred.

And a similar sacredness belongs to that dim cell where the two most conflicting of unlike existences, the dead world of matter and man's immortal soul, hold their twilight interviews, and make revelations to each other.

When I think, indeed, of that large-windowed little cottage which hides under the thatch of each eyebrow, and spreads every moment on its walls pictures such as Raphael never painted, and sculptures such as Phidias could not carve, I feel that it can with justice be likened to no earthly building ; or if to one, only to that Hebrew temple which has long been in the dust. Like it, it has its Outer Court of the Gentiles, free to every visitant, and its inner chamber where only the Priests of Light may come ; and that chamber is closed by a veil, within which only the High Priest LIFE can

enter, to hold communion with the spiritual presence beyond.

Such is a very imperfect description of that first great inlet of knowledge, the Eye : to cultivate its powers so that it shall be the entrance gate of the largest possible amount of instruction and delight, is one of the great ends of all education. And to encourage us in our work, we have the certainty that the human eye, as it excels that of every other animal in beauty, does so also in power. The eyes of many of the lower animals are in themselves, perhaps, as susceptible of education as our eyes are ; and in certain respects they are more wonderful. A shark can see in the depths of the ocean, where we, even if supplied with air, could not see at all ; a cat can see better in the dark than we can ; and a hawk can see a great deal farther. But two round bits of glass and a pasteboard tube give us greatly the advantage

of the longest-sighted hawk ; we need not envy the cat, for a farthing candle will put its eyes at a discount ; and when we have occasion to invade the domains of the shark, we can carry an artificial daylight with us and see better than he, though aided by the splendid mirrors at the back of his eyes.

The human eye is no doubt remarkable for the slowness with which it acquires its powers ; but then the powers it does acquire far transcend those acquired by the eyes of the lower animals. A kitten, for example, sees in a month as well as it ever does ; and a chicken half out of the shell will catch a fly as deftly as the mother hen can. Look, on the other hand, at a baby. It gazes about it with wondering, uncertain eyes ; stares at a candle, and plainly does not know what to make of it ; and is in a dream-like though complacent perplexity about all things. Cases, too, have occurred of persons who were born blind acquiring the use of their

eyes in mature life, and they have recorded how strange everything seemed, and how long it took them to realize what vision truly was.

The eye, then, was intended by its Maker to be educated, and to be educated *slowly*: but if educated fully, its powers are almost boundless. It is assuredly then a thing to be profoundly regretted, that not one man in a thousand develops the hidden capacities of his organ of vision, either as regards its utilitarian or its æsthetic applications. The great majority of mankind do not and cannot see one fraction of what they were intended to see. The proverb that "None are so blind as those that will not see" is as true of physical as of moral vision. By neglect and carelessness we have made ourselves unable to discern hundreds of things which are before us to be seen. Thomas Carlyle has summed this up in the one pregnant sentence, "The eye sees what it brings the power to see." How true this is! The sailor on the look-out

can see a ship where the landsman sees nothing ; the Esquimaux can discover a white fox amidst the white snow ; the American backwoodsman will fire a rifle-ball so as to strike a nut out of the mouth of a squirrel without hurting it ; the Red Indian boys hold their hands up as marks to each other, certain that the unerring arrow will be shot between the spread-out fingers ; the astronomer can see a star in the sky, where to others the blue expanse is unbroken ; the shepherd can distinguish the face of every sheep in the flock ; the mosaic worker can detect distinctions of colour, where others see none ; and multitudes of additional examples might be given of what education does for the eye.

Now, we may not be called upon to hunt white foxes in the snow ; or, like William Tell, to save our own life and our child's by splitting with an arrow an apple on its head ; or to identify a stolen sheep by looking in its face, and swearing to its portrait : but we must do

every day many things essential to our welfare, which we would do a great deal better if we had an eye as trained as we readily might have. For example, it is not every man that can hit a nail upon the head, or drive it straight in with the hammer. Very few persons can draw a straight line, or cut a piece of cloth or paper even; still fewer can use a pencil as draughtsmen; and fewer still can paint with colours. Yet assuredly there is not a calling in which an educated eye, nice in distinguishing form, colour, size, distance, and the like, will not be of inestimable service. For although it is not to be denied, that some eyes can be educated to a much greater extent than others, that can be no excuse for any one neglecting to educate his eye. The worse it is, the more it needs education; the better it is, the more it will repay it.

To describe the mode in which the eye should be trained is not my purpose: and it

would be vain to attempt a description of its powers when educated to the utmost of its capabilities. But let me, before parting with it, notice that in all ages, and by all peoples, the Eye appears to have been the most honoured of the organs of the senses. It has owed this, doubtless, largely to its surpassing beauty, and to the glory with which it lights up the countenance. But it owes its place as Queen of the Senses mainly to the fact, that its empire is far wider than those ruled over by its sisters. The Ear is fabled to hear the music of the spheres, but, in reality, is limited in space to those sounds which the earth and its atmosphere yield, and in time to the passing moment. The starry abysses for it are silent ; and the past and the future are equally dumb.

The Nostril, the Tongue, and the Hand are similarly bounded, perhaps even more so ; but the Eye so triumphs over space, that it traverses in a moment the boundless ocean which

stretches beyond our atmosphere, and takes home to itself stars which are millions of miles away; and so far is it from being fatigued by its flight, that, as the Wise King said, "it is not satisfied with seeing." Our only physical conception of limitless infinity is derived from the longing of the eye to see farther than the farthest star.

And its empire over time is scarcely less bounded. The future it cannot pierce; but our eyes are never lifted to the midnight heavens without being visited by light which left the stars from which it comes, untold centuries ago; and suns which had burned out, æons before Adam was created, are shown to us as the blazing orbs which they were in those immeasurably distant ages, by beams which have survived their source through all that time.

How far we can thus glance backwards along a ray of light, and literally gaze into the

deepest recesses of time, we do not know : and as little can we tell how many ages will elapse after our sun's torch is quenched, before he shall be numbered among lost stars, by dwellers in the sun most distant from us ; yet assuredly it is through the eye that we acquire our most vivid conception of what eternity in the sense of unbeginning and unending time may mean.

It is most natural, then, that the eye which can thus triumph over space and time should hold the place of honour among the senses. Of all the miracles of healing which our Saviour performed, if we except the crowning one of resurrection from death, none seems to have made such an impression on the spectators as the restoration of sight to the blind. One of the blind whose sight was restored by Christ, triumphantly declared to the doubters of the marvellousness of the miracle, "Since the world began was it not heard that any one opened

the eyes of one that was born blind." The perplexed though not unfaithful Jews inquired, "Could not this man, which opened the eyes of the blind, have caused that even this man should not have died?" And the opening of the eyes of the blind would startle us as much did we witness it now. To the end of time men will acknowledge that he who formed the eye justly declared of it, that "The light of the body is the eye;" and all tender hearts will feel a peculiar sympathy for those whom it has pleased God in his unsearchable wisdom to deprive of sight, and for whom in this life "Wisdom is at one entrance quite shut out."

II.

THE EAR.

The second of the Gateways of Wisdom is the Ear. The organ or instrument of hearing is in all its most important parts so hidden within the head, that we cannot perceive its construction by a mere external inspection. What in ordinary language we call the ear, is only the outer porch or entrance-vestibule of a curious series of intricate, winding passages, which, like the lobbies of a great building, lead from the outer air into the inner chambers. Certain of those passages are full of air; others are full of liquid; and thin membranes are stretched like parchment curtains across the corridors at different places,

and can be thrown into vibration, or made to tremble, as the head of a drum or the surface of a tambourine does when struck with a stick or the fingers. Between two of those parchment-like curtains, a chain of very small bones extends, which serves to tighten or relax these membranes, and to communicate vibrations to them. In the innermost place of all, rows of fine threads, called nerves, stretch like the strings of a piano from the last points to which the tremblings or thrillings reach, and pass inwards to the brain. If these threads or nerves are destroyed, the power of hearing as infallibly departs, as the power to give out sound is lost by a piano or violin when its strings are broken.

Without attempting to enter more minutely into a description of the ear, it may now be stated, that in order to produce sound, a solid, a liquid, or a gas, such as air, must in the first place be thrown into vibration. We have an

example of a solid body giving a sound, when a bell produces a musical note on being struck ; of a liquid, in the dash of a waterfall, or the breaking of the waves ; and of air, in the firing of a cannon, or the blast of a trumpet. Sounds once produced, travel along solid bodies, or through liquids, or through the air, the last being the great conveyor or conductor of sounds.

The human ear avails itself of all these modes of carrying sound ; thus the walls of the skull, like the metal of a bell, convey sounds inwards to the nerves of hearing ; whilst within the winding canals referred to, is enclosed a volume of liquid, which pulsates and undulates as the sea does when struck by a paddle-wheel or the blade of an oar. Lastly, two chambers divided from each other by a membrane, the one leading to the external ear, the other opening into the mouth, are filled with air, which can be thrown into vibration. We may thus fitly compare the

organ of hearing, considered as a whole, to a musical glass, *i.e.* a thin glass tumbler containing a little water. If the glass be struck, a sound is emitted, during which, not only the solid wall of the tumbler, but the liquid in it, and the air above it, all tremble or vibrate together, and spread the sound. All this is occurring every moment in our ears; and as a final result of these complex thrillings, the nerves which I likened to the "piano strings" convey an impression inwards to the brain, and in consequence of this we hear.

We know far less, however, of the ear than of the eye. The eye is a single chamber open to the light, and we can see into it, and observe what happens there. But the ear is many-chambered, and its winding tunnels traversing the rock-like bones of the skull are narrow, and hidden from us as the dungeons of a castle are; like which, also, they are totally dark. Thus much, however, we know, that it is in

the innermost recesses of these unilluminated ivory vaults, that the mind is made conscious of sound. Into these gloomy cells, as into the bright chamber of the eye, the soul is ever passing and asking for news from the world without; and ever and anon, as of old in hidden subterranean caverns where men listened in silence and darkness to the utterance of oracles, reverberations echo along the resounding walls, and responses come to the waiting spirit, whilst the world lifts up its voice and speaks to the soul. The sound is that of a hushed voice, a low but clear whisper; for as it is but a dim shadow of the outer world we see, so it is but a faint echo of the outer world we hear.

Such, then, is the Ear; and it is in some respects a more human organ than the Eye, for it is the counterpart of the human voice; and it is a sorer affliction to be cut off from listening to the tongues of our fellow-men, than it

is to be blinded to the sights on which they gaze.

Those who are born, or early become deaf, are far more isolated all their lives from their hearing neighbours, than the blind are from those who see. The blind as a class are lively and cheerful : the deaf are shy and melancholy, often morose and suspicious ; and naturally so, for our interest in each other far exceeds, and ought to exceed, our interest in the world, and from all this human sympathy the deaf are almost totally cut off ; whilst the blind, excused from many duties which the seeing only can discharge, are peculiarly free to indulge in gossip with their more favoured neighbours, and can largely exchange opinions with them. Moreover, the blind can scarcely fail to find their own tastes suited in some portion of the talk of their neighbours, and may thus gratify their inclinations to a considerable extent : whilst the deaf, unless they

have a great aptitude for such occupations as employ the eye and the hand, are far more narrowed in their circle of studies, and much more solitary than the blind. No one has illustrated this so touchingly as Dr. Kitto in his striking book on the "Lost Senses," when referring to his never having heard the voices of his children. "If there be any one thing arising out of my condition which more than any other fills my heart with grief, it is *this*: it is to see their blessed lips in motion, and to *hear* them not; and to witness others moved to smiles and kisses by the sweet peculiarities of infantile speech which are incommunicable to me, and which pass by me like the idle wind."

And a similar difference appears, though to a less extent, between those who have lost sight, and those who have lost hearing, after having enjoyed them. Milton, in one of the noblest passages of the *Paradise Lost*, bewails his blind-

ness ; but in a passage still nobler, he rejoices at what is left to him. I need not quote these passages in full to you, or recall those two sonnets unsurpassed in our language, in the one of which he answers the question he has raised—

“Does God exact day-labour, Light denied?”

and in the other tells his friend that though his eyes

“their seeing have forgot ;
Nor to their idle orbs doth sight appear
Of sun, or moon, or star, throughout the year,
Or man or woman. Yet I argue not
Against Heaven's hand or will, nor bate a jot
Of heart or hope ; but still bear up and steer
Right onward.”

Contrast with Milton an equally great genius, Beethoven the musician, who in the prime of life had the misfortune to lose his hearing, and could find almost no alleviation of his misery, in gratifying the senses which remained. Gloom,

anguish, and often the blackest despair darkened all his later years onwards to the tomb.

No doubt, as men they were very differently constituted. Milton was a man of serenely cheerful, versatile temperament, and of unusual mental culture, so that he had many things to fall back upon in the way of work and pleasure; and in spite of his blindness, he could gratify to the full his passionate love of music, and sing his immortal song: moreover, he was full of faith and trust in God.

Beethoven, on the other hand, was wayward, irritable, and fitful in temper, and, even before his deafness came on, afflicted with gloom. Music was the one and only art for which he cared, and in its solitary channel he poured forth all his soul. He had thus no other outlet for his genius; and his religious faith (I do not refer to his doctrinal belief, which was that of the Church of Rome, but to his personal trust in a Saviour) was not strong.

But conceding all this, those two mighty masters may be fitly regarded as furnishing characteristic examples of the relative severity of blindness and deafness, when they befall those who once saw and heard. We should every one of us, I suppose, prefer the lot of Milton to that of Beethoven, and find it more easy to console a blind painter than a deaf musician. I speak thus because I presume it is a matter of universal experience, that we can more easily and vividly recall and conceive sights, than we can recall and conceive sounds. It costs us no effort to summon before us, even though destitute of the painter's gifts, endless landscapes, cities, or processions, and faces innumerable ; but even rarely endowed musicians can mentally reproduce few, comparatively, of the melodies or harmonies they know, if debarred from uttering them vocally, or through some instrument. We may test this point by the experience of our dreams.

If I mistake not, though I would not speak dogmatically on this point, we never fully dream a sound. Coleridge in his "Kubla Khan" declares—

"A damsel with a dulcimer
In a vision once I saw :
It was an Abyssinian maid,
And on her dulcimer she played,
Singing of Mount Abora."

But this was the visionary vision of a poet ; in dreams, I imagine, we hear no sounds, unless it be those of the world without. We carry on many conversations, and marvellous things are told us ; but these, like our waking communings with ourselves, and mental hummings of tunes, are uttered by voiceless lips in a speechless tongue. Dreamland is a silent land, and all the dwellers in it are deaf and dumb.

How different is it with Sight ! No objects beheld by our waking eyes impress us so

vividly as the splendid and awful dissolving views which pass before us in the visions of the night. So much is this the case, that when in daylight life we encounter some reality more startling, more joyful, or terrible than most, we utter the strange paradox; "It cannot be true; it must be a dream!" I infer from this that the Blind, who must dream or imagine all the sights which they see, are, *cæteris paribus*, more fortunate than the Deaf, who must dream the sounds which they hear. In the life of Niebuhr there is a striking description of the long and happy hours which his blind old father spent in recalling the striking scenes which in early life he had witnessed in the Holy Land and other eastern countries; and every child who looks into its pillow to see wonders there, could record a parallel experience: but I know of no corresponding fact in the history of the deaf. At all events, an active and joyous memory of sounds is rare

among them. The ear is accordingly an organ which we can worse afford to lose than the eye; and one, therefore, which should be all the more cared for. It is still more susceptible of education than the eye, and can be educated more quickly.

Thus a love of music is much more frequent than a love of painting or sculpture; and you will reach the hearts and touch the feelings of the majority of mankind more quickly by singing them a song, than by showing them a picture. In truth, the sensitiveness of the ear to melody and to harmony is so great, that we not only seek to gratify it when bent upon recreation, but even in the midst of the hardest labour we gratify it if we can. Two carpenters planing the same piece of wood will move their planes alternately; so that, when the one is pushing his forward, the other is drawing his back, thereby securing a recurrence of sounds, which, from their in-

equality, would be harsh if they were heard simultaneously. In the same way two pavours, driving in stones, bring down their mallets time about; and so do working engineers when they are forging a bar; and the smith, when he has dealt a succession of monotonous blows, relieves his ear by letting his hammer ring musically on the anvil; and I need not tell you how sailors, heaving the anchor or hoisting the sails, sing together in chorus; nor remind you that the most serious of all hard work, fighting, is helped on by the drum and the trumpet.

This natural inclination of man towards music shows itself from the first. The infant's eye, we have seen, is aimless for a season; but its ear is alert from the beginning. It enters upon life with a cry; and its first sorrow, expressed in a sound, is soothed by the first sound of its mother's voice. One half of a nurse's time, I suppose, is spent in singing; and baby, when

not sleeping or drinking, is either making or hearing music.

Now is it not a thing to be deeply lamented, that the sensitive ears with which almost every one of us has been gifted by God, are so little educated, that they might as well be stuffed with tow, or plugged with lead, for any good use we make of them? To be sure we keep them sufficiently open to hear all the gossip about us, and can most of us tell when the cannons are firing; but as for training them to that exquisite sense of melody or harmony of which they are susceptible, how few do it!

Our national music is famous all the world over; our song-tunes and our psalm-tunes are listened to with delight in every clime. Yet how few can sing the ever-welcome songs of Burns: in how few churches will you hear psalm-singing that, as music, is other than a grief to an educated ear! This must be mended! Let every one so train, and educate,

and fully develop the faculty of hearing that is in those ears of his, that he may listen with full delight and appreciation to the songs of birds, and the roar of the sea, the wailing of the winds, and the roll of the thunder; and may be able to cheer his soul and calm his heart by hearkening to the music of his fellow-men, and in turn rejoice their hearts by making music for them.

St. Paul says that none of the voices or sounds in the world is "without signification;" and you will find that, for an appreciating ear, they all have an exquisite meaning; how much, moreover, education can do for this organ, I need not tell you. The subject is far too wide for discussion here; and I must only allude to it. The following points are worth our notice.

Although the ear has a greatly more limited range in space and time than the eye, it is in a very remarkable respect a more perfect in-

strument than the organ of sight. The eye can regard but a single object at a time, and must shift its glance from point to point when many objects are before it which it wishes to compare together. And when prosecuting this comparison, between, for example, two bodies, it has in reality but one imprinted on it, and compares the *perceived* image of this one with the *remembered* image of the other. This fact escapes us in ordinary vision, because the impression or shadow of a body on the retina remains for some time after the object is withdrawn from the sphere of sight,—a fact of which we can easily assure ourselves by whirling before our eyes a lighted brand, when it appears, not a succession of flaming points, as it actually is when so whirled, but an unbroken circle of fire. And further, we do not, in looking about us, take notice of the constant motions of the eyeball which bring different objects within the sphere of vision. If, however,

whilst looking at no larger surface than a printed page, we close one eye and lay the finger on it, whilst we read with the other, we can trace in the closed eye which follows the motions of the open one, how continually it shifts itself from point to point, and gazes successively at objects which we imagine it to see simultaneously. It is otherwise with the ear. Although perfectly untutored, it can listen to many sounds at once, distinguish their difference, and compare them together. Every one must be conscious of this. The simplest two-part tune demands from its hearer the simultaneous perception of a bass and a treble note, which impress the ear at exactly the same moment, but are perfectly distinguished from each other. A pianoforte player executing such a tune, requires alternately to shift his eyes from the bass to the treble line, for he cannot see simultaneously the two notes as he can hear them; and every one may easily

observe the contrasted power of the eye and the ear by trying to read simultaneously all the staves of a four-part song, whilst he is hearing it sung. Even an imperfect musical ear will without an effort distinguish each of the four voices singing different notes; whilst the most skilful eye cannot read more than a note or a chord at a time. I suppose every one has noticed the contrast between the air of anxiety which musical performers wear, when playing from music, compared with the serene or exultant look which sits upon their faces when playing from memory or improvising. This applies even to the greatest musicians, and cannot be conquered by education; for no training will confer upon the eye powers similar to those which the ear possesses without any training.

Our conceptions of the domain of the Ear are greatly exalted by a consideration of what has been stated, especially when we add the

fact that not merely a two-part or a four-part song, but the most complex harmonies performed by the largest band, may be heard by a single ear. Picture to yourselves the contrast between a great orchestra containing some hundred performers and instruments, and that small music-room built of ivory, no bigger than a cherry-stone, which we call an ear, where there is ample accommodation for all of them to play together. The players, indeed, and their instruments, are not admitted. But what of that if their music be? Nay, if you only think of it, what we call a musical performance, is, after all, but the last rehearsal. The true performance is within the ear's music-room, and each one of us has the whole orchestra to himself. When we thus realize the wondrous capabilities of the organ of hearing, I think we shall not fail to find an intellectual and æsthetical as well as a great moral admonition in the Divine words, "He that hath ears to hear, let him hear."

It is not necessary to **enlarge** upon the æsthetics of hearing. All great poets have been passionate lovers of music, and it has received due honour at their hands. Most of the great painters and sculptors have been lovers of music also, in this respect being more catholic than their brethren the great musicians, who have often been totally indifferent to the arts which appeal to the eye; and double honour has thus been paid to the ear.

I will, therefore, refer only to three æsthetical aspects of hearing :—

1st. Of all the senses it is the one which most readily and most largely lends itself to impassioned, emotional, or, as we otherwise name it, poetical or æsthetical feeling. The retiringness of the ear is one great cause of this. The mechanism of hearing does not obtrude itself. The conditions of sound are known only to a small fraction of mankind; and the

great majority of us die without even faintly realizing that the chief vehicle of sound, the atmosphere, has any existence. Music thus comes to us we cannot tell whence or how; and the less we are reminded of the mechanical or formal appliances by which an art appeals to our emotions, the more surely and profoundly are they stirred by it. The nostril is the only organ of sense that can compare with the ear in this respect, but its range is far more limited. The eye is much less fortunately circumstanced. The threads of the canvas, the shape and carving of the picture-frame, the string that suspends it, the nail on which it hangs, and the wall behind it, all disturb our delight at a picture, as the stains on a piece of marble, and the tarnish on bronze, do our delight at sculpture. The substantial material in which the painter and sculptor must work, continually, and often harshly, force themselves upon the fleshly sense, and conflict with the purely emotional appre-

ciation of their works. But music is never more delightful than when listened to in utter darkness, without obtrusion of the music-paper, or instrument, or performer ; and whilst we forget that we have ears, and are content to be living souls floating in a sea of melodious sound. To be awaked from sleep by splendid music is to me the highest conceivable sensuous pleasure. A certain ethereality thus belongs pre-eminently to music, as it does in a lesser degree to fragrance. The most prosaic, formal, and utilitarian of mankind, for whom no other fine art has any charms, acknowledge the attractions of music. Alone of all the arts, it has suffered nothing from the intensely scientific and strongly utilitarian temper of modern times ; and even in the most faithless of recent epochs, music has thriven when every other æsthetic development was reduced to zero.

Whatever accordingly we envy the ancients, we need not envy them their music ; they paid

no such honour to the ear as we do ; and it is remarkable that, at the dearest period of the last century, from the sleep of which nothing short of the French Revolution was sufficient to awake us, when only physical science was progressing, Handel and Haydn gave to us works which will be forgotten only when music of more amazing genius shall startle the world ; and in unbroken succession from their day, Mozart, Beethoven, Weber, Rossini, Mendelssohn, Meyerbeer, and many more, have placed us, in the matter of music, in advance of all the earlier ages.

2nd. The peculiar ethereality of music is doubtless one of the reasons why we so willingly believe that creatures of a higher order than ourselves are especially given to song ; and accept, as most credible, the declaration that immortal beings find the only sufficient expression of their emotions in praise. It was a splendid theory of the ancient Pagan sages,

that the whole visible heavens were melodious with a music, which gifted ears were privileged to hear, when star sang to star, and constellations rejoiced together. And it is a still grander belief of modern Christian men, that within the invisible heavens, angels that excel in strength, and undying human spirits, never cease their immortal song. But, apart from the sympathy which the imagination has with such a belief, it commends itself to our reason by an argument which none can disown, and which supplies the justification of that pre-eminent importance which, from the days of King David the Psalmist to our own, has been attached to the musical part of public religious worship.

Music forms the universal language which, when all other languages were confounded, the confusion of Babel left unconfounded. The white man and the black man, the red man and the yellow man, can sing together, however

difficult they may find it to be to talk to each other. And both sexes and all ages may thus express their emotions simultaneously ; for, in virtue of the power of the ear to distinguish, side by side, those differing but concordant notes which make up harmony, there is not only room but demand for all the qualities of voice which childhood, adolescence, maturity, and old age supply.

If this apply to earthly music, how much more to heavenly ! Though everything else in the future state may be dim and dark, and in all respects matter of faith or hope, not of vivid realization, this at least can be entered into, that all the children of Adam and Eve could unite in a common song. Of all the organs of the body, therefore, the ear is the one which, though for its present gratification it is beholden solely to the passing moment, can with the greatest confidence anticipate a wider domain hereafter.

3rd. In consonance with that home in eternity for which the Ear expectantly waits, to it is promised the earliest participation in the life to come. This divinely authenticated fact appears to have made a profound impression on men of genius of all temperaments since the days of our Saviour's presence upon earth. Many of you must be familiar with that beautiful hymn of the Latin Church, the "*Dies Iræ*," in which the solemnities of the last judgment, and the sound of the trump of doom, are echoed in mournful music from the wailing lines. Sir Walter Scott translated this sacred song. Goethe has introduced a striking portion of it into the cathedral scene in *Faust*, where the Tempter assails Margaret. Martin Luther's hymn reads like an echo of it. After all, it is itself but the echo and paraphrase of passages in the New Testament; and Handel, when he composed the "*Messiah*," went to the original for those words which he has set to undying music. From these

words we learn that the summons to the life to come will be addressed first to the Ear, and it first shall awake to the consciousness of a new existence ; "for the trumpet shall sound, and the dead shall be raised incorruptible, and we shall be changed."

III.

THE NOSE.

The Organ of Smell we are apt to regard more as an ornamental than a useful appendage to our faces. So useless, indeed, do a large portion of mankind esteem it to be, that they have converted it into a snuff-box ; it was given us, however, for a different purpose. It is a much simpler construction in all respects than the eye or the ear ; and as it stands closely related to the necessities of animal life, it is more largely developed in the lower creatures, such as the dog, who hunt their prey by the scent, than it is in ourselves. But we are largely endowed with an organ of smell also ; and besides its practical importance as a minister of the body, it has a close relation to our emotional

nature, and therefore an æsthetical aspect which will be noticed in the sequel. Its construction may be explained in a word. A glance at the cleft head of a dog or a sheep will show that the nostril opens into a large arched cavity, with many curled partitions partially dividing it into additional spaces. The walls and arch of this cavity are constructed of bone, and lined with a soft, moist, velvety membrane, resembling that inside the mouth. Over this membrane spread a multitude of small threads or nerves resembling the twigs of a branch; there are many such branches within the nostril, and they join together so as to form larger branches, which may be compared to the boughs of a tree. These finally terminate in a number of stems, or trunks, several for each nostril, which pass upwards through apertures provided for them in the roof of the arched cavity, and terminate in the brain.

We have thus, as it were, a leafless nerve-tree

bodies, if drawn into the nose in very small quantity, or highly diluted with air, are simply smelled ; if similarly inspired in large quantity, their odour is overpowered by their irritating pungency ; in moderate quantity, both odour and pungency are perceived. In what follows, I shall not attempt to distinguish between these influences, but be satisfied with the popular reference of the twofold sensation excited in the nostril by pungent odorous bodies, to the one category of smell.

So far as the lower animals are concerned, the uses of the organ of smell are manifest. It guides them in the selection of food and drink ; enables them to distinguish what is noxious from what is wholesome ; by its gratification renders food more welcome ; and, in many cases, assists them in tracing out their companions where the eye and the ear would be of no avail.

So far, again, as the nostril is a utilitarian

organ to man, its services may be described in a few words. I have not seen it anywhere laid down as a general rule, but I believe it might be affirmed, that we are intended to be impressed only sparingly and transiently by odours. There is a provision for this in the fact that all odours are vapours, or gases, or otherwise volatile substances, so that they but touch the inside of the nostril and then pass away.

In conformity with this fleeting character of odorous bodies, it is a law in reference to ourselves—to which, so far as I know, there is no exception—that there is not any substance having a powerful smell of which it is safe to take much internally. The most familiar poisonous vegetables, such as the poppy, hemlock, henbane, monk's-hood, and the plants containing prussic acid, have all a strong and peculiar smell. Nitric, muriatic, acetic, and other corrosive acids, have characteristic potent

odours, and are all poisons. Even bodies with agreeable odours, like oil of roses, or cinnamon, or lavender, are wholesome only in very small quantities; and where the odour is repulsive, only in the smallest quantities. Without accordingly enlarging on a topic which might be unwelcome to many, it may be sufficient to say here, that so far as health is concerned the nostril should be but sparingly gratified with pleasing odours, or distressed by ungrateful ones. No greater mistake can be made in sick-rooms than dealing largely in aromatic vinegar, eau de Cologne, lavender water, and other perfumes. This hiding of one odour by another is like trying to put away the taste of bitter aloes by that of Epsom salts. Physical comfort is best secured by rarely permitting an infraction of the rule, that the condition of health is no odour at all.

Turning from this lowest and least attractive

aspect of the sense of smell to one which acquires a higher importance from the moral considerations which in some respects it involves, it is of interest to notice how much longer we tolerate a forbidding odour, than we continue to relish a grateful one.

Perfumes quickly pall upon us, and we loathe the concentrated essences of even the sweetest flowers. But in their daily callings men submit without murmur to the most repulsive effluvia, and work even cheerfully amidst noisome gases. In the one case we seek pleasure and are disappointed because the nerves of smell, dulled by the first impression upon them, cannot with equal sensitiveness respond to a second; in the other, for the same reason, we can suffer without discomfort the diminished sharpness of the irritation, whose sharpest provocations are its first. There is thus a physical reason why we should tire of a smell once pleasant, and

grow indifferent to a smell once unwelcome. There is a moral reason also; for in the one case we think of pleasure, and in the other of duty. The palled perfume tells us, that but little of our lives may be spent in merely pleasing our senses; the tolerated infection bids us sit by the sick man's side, and set the preciousness of his life over against a little discomfort to ourselves: and so it is that while the listless voluptuary flings away the rose which has become scentless to him, the metal worker labours heartily among the vapours from his crucibles and refining vessels; and the bleacher inhales without a murmur the fumes of his chlorine; while, most tried of all, the busy anatomist asks no one for pity, but forgets the noisome odours about him, in delight at the exquisite structures which he is tracing; and the heroic physician thinks only of the lives he can save.

Apart altogether from the question of de-

light or the opposite in the exercise of smell, the extent to which the nostril may be educated far exceeds what most imagine can be realized in connexion with this despised sense. A fox-hound, a pointer, or a terrier, as all acknowledge, may be trained to a more quick or precise scent; but to speak of educating our own noses provokes only a smile. In keeping with this, our nomenclature of odours is exceedingly restricted; and whether good, bad, or indifferent, we soon exhaust in every language our means of distinguishing them. Yet the chemist, who has, like the blood-hound, to trace out the poisoner, like the blood-hound often hunts him down by the smell; and it is not only poisons that he distinguishes by their varying odours, but a multitude of substances whose other characters do not enable him to identify them. There are probably as many odours as there are colours or sounds; and the compass of one nostril in reference

to the first, likely differs as widely from that of another, as the compass of the eye or the ear does in reference to the two last. The wine merchant, the distiller of perfumes, the manufacturer of drugs, the grower of scented plants, the tobacco dealer, and many others, have by long training educated themselves to distinguish differences of odour which escape an uneducated and unpractised nostril, however acute by natural endowment. Let those who doubt this visit a scientific chemist's laboratory, and examine his specimens one by one, and they will easily satisfy themselves that a facsimile of the largest church organ might be readily constructed, in which each organ-pipe, sounding a different note, should be represented by a phial exhaling when opened a different odour.

I will now, but very briefly, refer to the æsthetics of odour. In thinking over this matter, two points have especially struck me

—the one, the much greater importance attached to the use of perfumes by the ancient than the modern civilized nations; the second, the much greater use made of perfumes by Oriental and Southern peoples than by those of the North and the West. The two things, although I have separated them, to a great extent flow from certain common sources.

I need not enter into detailed proof that the Egyptians, Persians, Greeks, Hebrews, and in a word all the ancient nations who had attained to civilization, were addicted to the use of perfumes to an extent to which no European people at the present day affords any parallel. And let it be observed, that it was not merely as contributing to the luxury of the body that perfumes were so prized. They were used at every sacred ceremonial; lavishly expended at the public religious services; and largely employed at the solemn rites which were celebrated at the burial of the dead.

Take the Hebrews as the nation most familiar to all of us, and observe how great was the importance attached by them to the sacred employment of fragrant substances. The altar of incense stood in a most conspicuous part of the Temple, and sweet incense was burned upon it every day. The High Priest was forbidden to enter the Holiest of All unless bearing in his hand the censer, from which clouds of perfumed smoke rose before the mercy-seat. A portion of frankincense, consisting of a mixture of many sweet-smelling substances, was added to the sacrifices; and a richly perfumed oil was employed to anoint the altars and other equipments of the Temple, and the priests themselves, as a mark of their appointment to the service of God.

Let it not be forgotten, that a similar use of incense, and of perfumes, was practised all over the ancient civilized world, doubtless in obedience to a command of divine origin, handed down by

the fathers of the great nations of antiquity, and variously obscured in the course of its transmission. The Hebrews alone were favoured with a re-issue of this divine command, and attached a distinct symbolical meaning to the use of perfumes, which, when used in oils or ointments, they regarded as the marks of sanctification or dedication to God's service; and when employed in the cloud of incense rising through the air, as emblematical of the prayers and thanksgivings of devout worshippers ascending to the throne of God, and with which He was well pleased. The ancient heathen peoples entertained similar though less precise and worthy conceptions of the use of odours in religious service. Take, for example, the Egyptians, to whom I refer because I know their habits best. In the scenes on the tombs, we see continually represented a kneeling worshipper, holding a long-handled censer filled with incense, under the nostrils of the god he

seeks to propitiate ; and on other occasions, he lifts up towards him a fragrant flower. I need not particularize such cases, however, for it does not admit of question that centuries before the existence of the Hebrew people, the offering of odorous vapour formed a sanctioned part of religious service. It is probably coeval with sacrifice, the most ancient of sincere religious rites, and as old, at least, as the days of Cain and Abel. The smoke, indeed, of every burnt sacrifice was an offering of incense ; and to go no further back, let me recal that very ancient event in the human history of the world,—the erection by Noah, when he left the ark, of an altar on which he offered burnt-offerings. It is added (Genesis viii. 21), “ The Lord smelled a sweet savour.” To the children of Noah, the parents of the ancient nations, the use in religious worship of odorous vapour must thus have been quite familiar ; and we need not wonder that we find it prevailing among all their descendants.

No symbolical religious service, however, has prevailed for any length of time among a people, unless it consorted with their tastes and habits. A divine system of symbolism, we may be certain, would meet at many points the tastes of those to whom it was given ; and a human system of symbolism would arise out of them. I refer, therefore, to the sanctity attached to perfumes in ancient times, as in itself a proof that they had a value in the eyes of the world's grey fathers and their elder sons, such as they have not with us. One other proof of this only need be referred to. The same estimate of their value which led to the offering of perfumes to the gods, led to their offering to the most prized objects of human affection during their lives, and to their plentiful bestowment on their bodies after death. All will remember the striking scene in our Saviour's life, where the alabaster box of very precious ointment, whose costliness depended chiefly on the perfumes in it, was

poured upon his head, as he sat at meat, and to the myrrh and aloes, the spices and ointments which were employed at the entombment of his body. And although a special affection was shown in the extent to which sweet-smelling substances were employed on both occasions, yet so entirely was their use in keeping with the customs of the people, that the Saviour gently reproached Simon for not anointing his head with oil, but leaving that act of Oriental hospitality to her of whom to the end of time it is to be a memorial: and St. John, in referring to the body of Jesus being wound in linen clothes with the spices, adds, "as the manner of the Jews is to bury."

Of all this lavish use of perfumes there remain amongst us but two scanty relics: the one the anointing of our kings and queens at their coronation; the other, the censer of incense which appears in the Roman Catholic and Greek churches. But I am not aware that it

is held essential to the anointing coronation-oil that it be perfumed: I suppose, indeed, that it is not, for we have it on record that Queen Elizabeth complained of the "evil smell" of the oil with which she was anointed; whereas it was essential to the sacredness of that used by the Hebrews that it should be full of fragrance; and, so far as I know, the employment of incense in modern churches is on a very small scale, and as a secondary and accessory part of the service.

It is difficult for us to realize the immense difference between ancient and modern feeling and practice in reference to this; but we may imagine the emotions with which a Hebrew of the days of Aaron, or Solomon, or Herod, would worship in one of our Protestant churches. It would startle him to find that the ear had become the most religious of the senses: that the eye was scarcely appealed to except to guide the ear; and that the nostril was not

2. A second cause of this difference is the much more bountiful production by nature in warm than in cold climates of fragrant flowers, fruits, gums, oils, spices, and the like, which tempt, and gratify, and educate the sense of smell.

3. A third is the much more rapid and extensive evolution of volatile odorous substances in the hot than the cold regions of the globe; and,

4. The last which I shall name is the influence of a burning sun on the body, making bathing and subsequent perfumed anointing of the skin, which appear to us luxuries at one season and useless or unwelcome superfluities at another, rank among the necessities of life.

If you wish the extremest contrasts in this respect, take the Syrian, or Egyptian, or Italian, with his fountains of rose-water, his courts fragrant with jasmine and orange-flowers, his

scented tobacco, his aromatic coffee; and anointing oil saturated with sweet-smelling essences, and compare him with the Esquimaux, or the Kamschatkan, or the Samoyed, who cover up their nostrils from the bitter wind; who live in a region where there are no flowers unless for the briefest season; and where, if there were, their sweetness would be wasted upon an atmosphere so chill that it freezes every vapour, and therefore every odour, and under which the undecaying mammoth remains fresh as on the day of its death a thousand years ago, when it was entombed in a glacier, since become an iceberg, as antediluvian flies have been buried in sepulchres of amber.

To these Northerners their noses are more objects of concern lest they be frostbitten, than avenues of pleasure; and we more resemble them than we do the Southern nations in our endowment of smell. Add to this, that in these later days, when one half of the

community are steeped in such physical degradation and wretchedness that they cannot use their senses aright, and the other half have so over-cultivated their intellects that their senses have ceased to serve them aright, it was natural that the sense of smell with which we are not highly endowed, and which we cannot very easily gratify, should become to us an object of less concern than any of the other senses. We appear partly to despise our noses, insulting them with snuff; partly to be ashamed of them, no man confessing to the use of perfumes, however fond of them, or liking to be caught begging a sprinkling of lavender-water from a lady's bottle.

This, however, is a small matter, not, perhaps, calling for special consideration. But there is a power on the part of odours, agreeable or disagreeable, to excite in us feelings of pain and of pleasure, like those which the chords and discords of music; and which cold and

warm colours produce; and this, like every other æsthetical perception, demands cultivation, and will repay it.

If the ten thousand Greeks shouted for joy when they *saw* the sea, I am sure there was another burst of gladness when its fresh breath first filled their nostrils. The far-wafted scent of a bean-field, or the honey odour of a hill covered with heather, has in a moment brought before the home-sick sailor the rustic cottage from which he wishes he had never fled; and all the memories of forgotten childhood have been recalled in a moment to an aged man by the sweet smell of the trodden grass, which has brought out the vision of infant gambols threescore years before among the new-cut hay. And what a depressing influence have hateful odours upon us, and how much do they deepen our dread of disease, our abhorrence of death, and horror of the grave!

Our greatest poet felt all this profoundly.

Shakespeare, when he held the mirror up to nature, reflected faithfully every sense, and does not show her with noseless features like those of the great Egyptian Sphinx. How much would Hotspur's picture of the popinjay Lord,—

“Neat, trimly dress'd,
Fresh as a bridegroom, * * * *
* * * * perfumed as a milliner,”

lose, if it wanted the complaint against the soldiers carrying off the dead,—

“Untaught knaves, unmannerly,
To bring a slovenly unhandsome corse
Betwixt the wind and his nobility.”

When we stand with Hamlet beside the grave prepared for Ophelia, and moralise with him on what man's strength and woman's beauty must in each case come to; how natural we feel it to be, how inevitable, that sooner or later he should hold out the jester's skull to Horatio, and say—

"HAM. Dost thou think Alexander looked o' this
fashion i' the earth?

HOR. E'en so.

HAM. And smelt so? Pah!"

In the sleep-walking scene in Macbeth, how intensely are we made to realize the anguish of the guilty, conscience-stricken woman, when Lady Macbeth, gazing on her soft, white, delicate hands, which seem to her remorseful spirit defiled by the blood of Duncan, exclaims,—

"Out, damned spot! out, I say! * * * * Here's the smell of the blood still: all the perfumes of Arabia will not sweeten this little hand! Oh! oh! oh!"

The impassioned Italian Juliet replies to her own question—

"What's in a name? That which we call a rose,
By any other name would smell as sweet;"

as if to her a rose were more remarkable for its sweet smell than for its rich colour or its graceful form. And, in keeping with this comparison of her loved Romeo to a fragrant

rose, how deeply does she draw upon the sense of smell, to darken her terrible picture of what may befall her when she awakes from her trance in the tomb! The passage must be read as a whole to appreciate the force of these touches; but you will remember how, when picturing to her vivid imagination what may betide if she awake before Romeo comes to her release, she asks—

“Shall I not then be stifled in the vault,
To whose foul mouth no healthsome air breathes in,
And there lie strangled ere my Romeo comes?

* * * * *

Is it not like, that I,
So early waking—what with loathsome smells;
And shrieks like mandrakes torn out of the earth,
That living mortals, hearing them, run mad;—
Oh! if I wake shall I not be distraught?”

I will quote but two further illustrations of the point under notice from the plays of the same great poet. The one is that passage in *King Lear*, beginning “Aye, every inch a king,”

where Lear after his passionate and madly-exaggerated denunciation of female depravity, suddenly arrests the hateful current of his thoughts, by the boldly figurative demand, "Give me an ounce of civet, good apothecary, to sweeten my imagination."

The last is the most beautiful of all, and occurs in the commencement of *Twelfth Night*, in the familiar passage where the Duke says of the music to which he has been listening,—

"That strain again :—It had a dying fall ;
Oh, it came o'er my ear, like the sweet south
That breathes upon a bank of violets,
Stealing and giving odour."

In these lines we have the nostril and the ear linked together æsthetically, as the respective entrance gates of music and fragrance.

The æsthetical link, however, which connects sound and smell, is a double one. In the passage just quoted, Shakespeare associates the reception of sound by the ear with the

reception of odour by the nostril, through the carrying agency of the wind. He has not forgotten, however, nor have others, to place side by side with the utterance of speech or of music, the emission of fragrance. The poets of all countries, I suppose, have delighted to call the scent of a flower its breath; but a breath is a sound, and, unless at the limit of faintness, an audible respiratory murmur. Bacon felt this when, in his delightful Essay "Of Gardens," he told his readers that "the breath of flowers is far sweeter in the air—where it comes and goes like the warbling of music—than in the hand;" comparing, as it were, the free-growing flower, giving forth fragrance, to an uncaged bird like the nightingale, singing under the open sky.

In the same spirit, reversing the metaphor, poets have loved to speak of the healthful breath of beautiful women as perfuming the air; a comparison which includes, however, lat-

ently, a recognition of the sound, as well as of the aërial wave produced by respiration, and from which the transition, especially as associated with waking, vocal life, is almost immediate to the conception of the perfumed breath as fraught with words or with music. No single passage, perhaps, better illustrates the recognition of this relation of sound and smell in their emission, than a portion of the famous passage in *Cymbeline*, where Iachimo describes the sleeping Imogen, and declares,—

“’Tis her breathing that
Perfumes the chamber thus.”

But I will also quote Shakespeare’s XCIX. Sonnet, one of the most exquisite of them all: and I give it entire, because it so beautifully weaves together the eye, the nostril, and the ear, each as it were like instruments in an orchestra, in turn playing the air, and then falling back into an accompaniment, so that now it is colour which is most prominent

before us, and then smell, and then sound, and thereafter through colour we return to sound and fragrance again :—

“The froward violet thus did I chide :

Sweet thief, whence didst thou steal thy sweet that smells,

If not from my love's breath ? The purple pride

Which on thy soft cheek for complexion dwells,

In my love's veins thou hast too grossly dyed.

The lily I condemned for thy hand,

And buds of marjoram had stolen thy hair :

The roses fearfully on thorns did stand,

One blushing shame, another white despair ;

A third, nor red nor white, had stolen of both,

And to his robbery had annex'd thy breath ;

But for this theft, in pride of all his growth,

A vengeful canker eat him up to death.

More flowers I noted, yet I none could see,

But sweet or colour it had stolen from thee.”

In the hands of the Hebrew poets and other sacred writers, the association of sound and smell is carried up into identification. They go far beyond the boldest of Ethnic writers ; and however difficult it may be for us to sympathise fully with them, we may be sure that to an

ancient Hebrew, in the days when symbols spoke to men's imaginations as they do not now to ours, it seemed most natural to regard incense as prayer, and to feel, when the perfumed smoke was ascending from the altar, as if it were the voice of the high-priest, in silent eloquence making a new confession of the sins of the people, beseeching forgiveness for them, and offering their thanksgivings to God. There was thus too, it may be noticed in passing, an opportunity for social prayer offered to those who were at once blind and deaf, which our modern incenseless worship does not supply.

It seems unquestionable, moreover, that the Hebrews went beyond the simple identification of odour with sound. Some odours were equivalent to acceptable, prevailing prayers; others represented unaccepted or unanswered petitions to God, and even, as should seem, curses and blasphemies. The first proposition, at least, admits of ready proof. "The Lord smelled a

sweet savour," when he accepted the burnt-offering of Noah. (Gen. viii. 21.) When the people murmured, after the rebellion of Korah, Aaron hastened at Moses' command to put the "pure incense of sweet spices" along with fire into his censer, and thus "made an atonement for the people." (Numbers xvi. 47.) By King David the prayerful character of incense was so strongly realized, that he speaks as if it were a greater reality than the prayer which it symbolised. "Let my prayer," says he, "be set forth before thee as incense" (Ps. cxli. 2); and when a prophet would refer to the distant time when all the Gentile nations should worship God, although incense-burning was to form no part of their religious rites, still it alone is referred to, as if it were a perfect but more graphic synonyme of prayer: "In every place incense shall be offered unto my name, and a pure offering: for my name shall be great among the heathen, saith the Lord of hosts." (Malachi i. 11.)

So also even when that stately system of rites and ceremonies, which were but the shadow of good things to come, had waxed old and was ready to vanish away, St. John still used figures taken from it to describe the services of the sanctuary of heaven.

Before the seven angels sounded their trumpets, "another angel came and stood at the altar, having a golden censer; and there was given unto him much incense, that he should offer it with the prayers of all saints upon the golden altar which was before the throne. And the smoke of the incense with the prayers of the saints ascended up before God out of the angel's hand." (Rev. viii. 3, 4.) Here we reach the highest generality, universal homage to God,—the prayers of "all" saints, rising with the smoke of "much" incense; the visible vapour, the audible sound, the invisible, inaudible fragrance inseparably mingled, and as it were appealing together to the mercy of the omniscient Father of all.

The converse proposition—to the extent, at least, that unfragrant incense was equivalent, in the estimation of the Hebrews, to unprofitable, unlawful, or unacceptable prayer—can also be established. They were warned by God that if they walked contrary to his way, “I will not smell the savour of your sweet odours.” (Lev. xxvi. 31); and when they did disobey, “I will not smell in your solemn assemblies” (Amos v. 21); and again, “Incense is an abomination unto me.” (Isaiah i. 13.)

In these passages, the reference unquestionably is rather to unsmelled or odourless incense, than to incense exhaling a noisome odour. Still it can scarcely be doubted that where by Divine command the most scrupulous care was exercised in selecting and compounding the sweetest spices for the altar-incense, and where the acceptance of sacrifice and the gracious answer to prayer were denoted by God’s smelling a “sweet” savour, an odour of the opposite kind,

if rising from the censer or altar of burnt-offering, must have been associated, still more strongly than the mere absence of odour, with a mocking or dishonoured prayer. I imagine that if, by accident or profane design, some mal-odorous body had been mixed with the incense, so that when kindled it filled the court of the Temple with a noisome instead of a fragrant vapour, the worshippers would have been as much appalled as if the priest had uttered curses instead of blessings.

I am not certain that the same idea does not in part enter into the ominous references, occurring frequently in the Apocalypse, to "the smoke of the torment" of the objects of Divine wrath. The misery of blaspheming spirits is dimly revealed to us by figures taken among other things from burning combustibles, such as sulphur, the odour of whose vapours (including all its volatile compounds) is as hateful as they themselves are deadly. But on this I will not

dwell. The Hebrews, after all, only condensed into more specific beliefs those sympathies, common to all mankind, which lead us to connect fragrance with health, happiness, and joyous existence, and revolting odours with disease, suffering, and death.

And now, before bringing to a conclusion this apology for the Nose, let me urge that although to us, as a northern, cold-blooded, unimpassioned people, odours are but a small source of either pleasure or pain, we should seek to sympathise with those more sensitive nations to whom they largely minister both delight and suffering ; and should not forget, that the Bible is thick strewn from beginning to end with the most expressive metaphors, applied to the most solemn persons and things, taken from odorous bodies.

The Patriarchal and Hebrew services had in them much that was for us for all time. The incense and the pure offering which they pre-

sented in symbol, we are to present in reality ; and those four-and-twenty elders who around the throne of God ~~represent all nations~~, and ~~kindreds~~, and people, and tongues, if they hold in the one hand harps, in the other lift up "golden vials full of odours, which are the prayers of saints."

IV.

THE TONGUE.

The organ of taste is generally held to be synonymous with the tongue, but, in reality, the throat and the nostril are as much concerned as the tongue in the perception of taste. The power of these portions of the body to distinguish savours, mainly depends, as in the case of the eye and the ear, upon their connexion with the brain through those fine white chords which have been already referred to as called nerves. The tongue and the auxiliary organs of taste are largely supplied with nerves, and through them those sensations are experienced which we connect with the words taste, savour, sapidity ; sweet, salt, sour, bitter, and the like.

Of all the organs of the senses, that of taste, which may be held to be represented simply by the Tongue, is probably the one which receives the worst usage at our hands. The eye, the ear, and the nose are not educated at all, or their education is left to chance, but the tongue is deliberately mis-educated, perverted, and led astray. We eat what we should not eat ; drink what we should not drink : eat too much of what we may eat, and drink too much of what we may drink. And the result is, that we ruin our health, enfeeble our bodies, dull our intellects, brutalize our feelings, and harden our hearts. If the tongue could be allowed to speak for itself, instead of being compelled by the other organs of the body only to speak for them, it would protest loudly against the treatment which it receives. Many a pipeful of bad tobacco, and glass of worse liquor, and plateful of ill-cooked meat, and wasteful dinner, and heavy supper, would find such a clamour raised

against it by the tongue, that it would fail to find entrance into the mouth. And, on the other hand, such an outcry would be made for milk, and bread and butter—for plain food, and plenty of it—that a man would be thankful to eat and drink rationally and temperately, if only to keep his own tongue quiet. Yet, after all, if when a man were about to become a glutton, or a drunkard, or a self-poisoner, his tongue should keep shouting out, "No! no! don't take it! don't take it! murder! murder!"—why, I believe he would bite it out, and spit it away. It may be worth a moment's reflection, however, to consider what the effect would be on us if it were otherwise. As it is, the tongue is the slave of the rest of the body, as well as of the soul. The heart says, Make love for me, and the tongue makes love for the heart; the brain says, Discourse for me, and the tongue discourses for the brain; the soul says, Pray for me, sing for me, curse for me, tell lies for me;

and the tongue prays, sings, curses, and ~~tells~~ lies for the soul. If, however, the tongue should refuse to do all this, unless it were allowed a word occasionally for itself, what startling things it would tell us, even if it were permitted to speak only of what concerned it as the organ of taste! What a universal consternation would be created, if some fine morning we were all awakened by our tongues talking to us instead of for us! Each startled listener would run to the mirror and gaze in horror at his tongue in it, only to see, as it were, that tongue talk to him from the glass, and reproach him for his intemperance. Suppose the man really ill, the doctor sent for, and that the tongue, after reluctantly telling for the sick man an outrageous falsehood as to the cause of his illness, were, the moment it was thrust out at the physician's request, to proclaim what really made the liar ill. How would the patient and the doctor look! Or fancy when one hypocritical lady

was about to pretend to another hypocritical lady, admiration of an ill-made dish of the latter's cooking, which in reality she abhorred, that her tongue spoke for itself, instead of speaking for her, and told the truth, and that the tongue of the second lady said of itself, "I agree with you : " how strangely the two hypocrites would feel !

If our tongues had such a power, all social feasting would come to an end. Every man would eat and drink alone in some hermetically closed cell with deafened walls. Every fortunate baby, even before it was christened or vaccinated, would have its tongue clipped out as the greatest service that could be rendered to it. A few intended for the pulpit and the bar, and as professors and lecturers, would be doomed to the misery of retaining their tongues ; but the more favoured majority would thankfully find themselves dumb. If any but doomed public speakers sought to exclude themselves from this dismem-

bering, they would be forced to submit. What dinner even of herbs could be eaten in peace, if a single rebellious tongue were left to criticise it? What credit would remain to physicians, if the tongues of their patients could reproach them for the ill-judged drugs they administered? What rest could a selfish world have, if the tongues of all the famine-stricken hungerers on the face of the earth were night and day to cry unto it for food? No! it could not be; and yet what a reproach on humanity that it should be so. If the tongues of the lower animals could speak for themselves, how seldom would they exercise their privilege! how certainly they would be listened to by their possessors!

And yet we, men and women, may keep our tongues, and they may hold their peace. There is within our hearts another tongue, which calls itself conscience, and is the slave of no organ or faculty of body or soul, but the lord of them

all. It will not be stopped in its unceasing truth-tellings, and if we will not heed its silent accusings, we would not listen to the open up-braidings of our tongues.

Of them I will say no more, neither will I do more than touch upon the interesting but difficult question of the æsthetics of taste. The great majority of the community must be content with daily bread, and it would be idle and even cruel to discuss before them nice questions concerning meats and drinks which they never taste. And they may be consoled by the reflection, that the small minority who can gratify their palates too often pamper them, and are tempted into a gluttony or epicureanism far more pitiable and degrading than condemnation to the coarsest fare. Yet assuredly taste has its legitimate æsthetical domain, and it is as unworthy of man's true dignity that he should be content to live upon the husks that the swine do eat, as that he should be miserable

if he do not fare sumptuously every day. All the other senses have a direct interest in the practical decisions of the sense of taste. Drunkenness and dyspepsia dim the eye, dull the ear, blunt the nostril, and make the hand tremble. In this country, also, they are as much occasioned, directly or indirectly, by the unpalatable food, which the untrained hand of the ignorant house-mother provides for the working man's family, as they are by the too tempting viands with which his well-salaried French cook loads the rich man's table. Till, indeed, both rich and poor understand better the laws of health, and put more extensively in practice the plentiful discoveries of science in relation to the wisest way of dealing with themselves physically, we must be prepared to witness enormous waste, not only of food and money, but of the bodies and souls of men. And it is vain to discuss, unless in some special circles, the æsthetic of taste, whilst the very alphabet of diet remains un-

mastered ; a few words, accordingly, will suffice upon the subject.

The sense of taste is denied the free and liberal gratification which is accorded to the other senses. It costs but the unconscious lifting of the eyelid to provide the eye with a feast of many courses ; it needs but a turn of the head, and often not even that, and the ear is filled with music ; and, at the utmost, an inclination of the face, and the nostril is full of perfume. But the mouth is a helpless expectant, which is not filled merely by being opened ; and all the other senses must labour till they are weary, before taste can be even slightly gratified. We may be played to by invisible Ariels, and, like Stephano, have our music for nothing. Those innocent thieves, the winds, will make free for us with imperial gardens, and fetch us unbidden the fragrance of their choicest flowers. The works of art of the Great Master are ours at all times to gaze

upon without any fee: but we must earn our bread with the sweat of our brow. Here and there a select mortal may bend a cool forehead over an unearned luxurious repast, but some other mortal's brow will all the sooner get wrinkled, and his crust must be procured by the harder toil. There is thus a hungry helplessness about the mouth, which places it æsthetically on a level far below the eye, soaring like an eagle through space, and the ear, like a passionless spirit, listening serenely to the voices of the world. The sense of taste, in truth, is at the mercy of the other senses; and though it can revenge itself for their neglect or misuse of it, it is a sufferer by its own revenge.

Moreover, it is selfish in a way no other sense is. The eye of one man is robbed of no delight, because the eye of another is gazing on the same beautiful object,—nay, often its delight is thereby increased; the ear is quickened to a keener pleasure when it is not a solitary

listener; and the nostril asks no monopoly of the scents it loves. But the most generous and self-denying of men cannot share his morsel, as he can his music, even with her he loves best. The rigid philosopher may tell us that all the senses are equally selfish, and that each tongue does not more certainly appropriate to itself what no other tongue is allowed to taste, than each eye sees and each ear hears what no other eyes and ears are permitted to see or hear. But we do not feel it so æsthetically, and so we think more meanly of the sense of taste than of any of the others, and this even when it is not wronged by famine, or pampered by luxury.

Thus, helpless, selfish, and exacting, the dependant of the other senses, and the servant of the body rather than of the soul, it links us more with the lower animals than with higher existences, and has no element of ethereality about it. A hungry hog probably

derives more delight from the impression made upon his gustatory nerves by the contents of his trough, than the most sensitive human epicure ever did from his most *recherché* wines and dishes. Protracted hunger is assuredly a more pitiable thing than blindness or deafness; but it is also more horrible, and partakes of the forbidding character of disease; nor does the voracity of a famished man display much of the sublime or beautiful. A social feast, indeed, may furnish pleasure to every sense, but it is not till hunger is appeased that the higher senses are ministered to; and gourmands notoriously do not lay a double task upon their tongues, but agree with the ascetics in eating in silence. We must, indeed, reduce ourselves to mere animals if we give this sense the pre-eminence, since it is glorified only by association with the others; for the tongue, as the organ of taste, is the commissary-general, without whose supplies the other senses can

that the tactile susceptibilities of the skin depend, as do the peculiar endowment of the other organs of the senses, on its plentiful supply with those wondrous living chords, or nerves, which place in vital communication with each other all the organs of the body, on the one hand; and that mysterious living centre, the brain (and its adjuncts), on the other. Our simplest conception of an organ of sense is supplied by the finger, which whether it touches or is touched, equally realizes that contact has been made with it, and enables the mind to draw conclusions regarding the qualities of the bodies which impress it. Now, after all, every one of the organs of the senses is but a clothed living nerve conscious of touch, and they differ from each other only in reference to the kind of touch which they can exercise or feel. Keeping in view that to touch and to be touched is in reality the same thing, so far as the impression of a foreign

body is concerned, we can justly affirm that the tongue is but a kind of finger, which touches and is touched by savours; that the nostril is touched by odours; the ear by sounds; and the eye by light.

The Hand, with its fingers, is pre-eminently the organ of touch, and to it alone I shall now confine myself.

The analogy of a Gateway applies less strictly to the case of the hand than to that of the organs of the other senses. We must add to the conception of a gate that of a bridge; a draw-bridge, or better, a flying-bridge, or bridge of boats, which can be contracted, expanded, stretched towards any point of the compass, or withdrawn altogether. This Hand-Bridge, as I may call it, we must also think of as employed as frequently to establish a communication between the outer world and the four smaller gateways of the senses, as between it and the great Gateway of Touch.

I will not, however, pursue the analogy further, or do more than glance at the æsthetical and vicarious activity of the fingers.

The Hand is emphatically the organ of touch, not merely because the tips of the fingers, besides being richly endowed with those nerves which confer sensitiveness upon the skin of the whole body, possess in addition an unusual supply of certain minute auxiliary bodies, called "tactile corpuscles," but because the arrangement of the thumb and fingers, and the motions of the wrist, elbow, and arm, give the hand a power of accommodating itself spontaneously to surfaces, which no other part of the body possesses. Moreover, when we speak of the hand as the organ of touch, we do not refer merely to the sensitiveness of the skin of the fingers, but also to that consciousness of pressure upon them in different directions, by means of which we largely judge of form. When a blind man, for example, plays a musical instru-

ment, he is guided in placing his fingers, not merely by the impression made upon the skin of them, but also by impressions conveyed through the skin to these little bundles of flesh called muscles, which move the fingers. Were it possible to deprive the hands of their skin without inflicting pain, we should retain the muscular touch, and with it the power of playing.

In many respects the organ of touch, as embodied in the hand, is the most wonderful of the senses. The organs of the other senses are passive: the organ of touch alone is active. The eye, the ear, and the nostril stand simply open: light, sound, and fragrance enter, and we are compelled to see, to hear and to smell; but the hand selects what it shall touch, and touches what it pleases. It puts away from it the things which it hates, and beckons towards it the things which it desires; unlike the eye, which must often gaze transfixed at

horrible sights from which it cannot turn ; and the ear, which cannot escape from the torture of discordant sounds ; and the nostril, which cannot protect itself from hateful odours.

Moreover, the hand ~~cares not only~~ for its own wants, but, when the other organs of the senses are rendered useless, takes their duties upon it. The hand of the blind man goes with him as an eye through the streets, and safely threads for him all the devious way ; it looks for him at the faces of his friends, and tells him whose kindly features are gazing on him ; it peruses books for him, and quickens the long hours by its silent readings.

It ministers as willingly to the deaf ; and when the tongue is dumb and the ear stopped, its fingers speak eloquently to the eye, and enable it to discharge the unwonted office of a listener.

The organs of all the other senses, also, even

in their greatest perfection, are beholden to the hand for the enhancement and the exaltation of their powers. It constructs for the eye a copy of itself, and thus gives it a telescope with which to range among the stars; and by another copy on a slightly different plan, furnishes it with a microscope, and introduces it into a new world of wonders. It constructs for the ear the instruments by which it is educated, and sounds them in its hearing till its powers are trained to the full. It plucks for the nostril the flower which it longs to smell, and distils for it the fragrance which it covets. As for the tongue, if it had not the hand to serve it, it might abdicate its throne as the Lord of Taste. In short, the organ of touch is the minister of its sister senses, and, without any play of words, is the handmaid of them all.

And if the hand thus munificently serves the body, not less amply does it give expression

to the genius and the wit, the courage and the affection, the will and the power of man. Put a sword into it, and it will fight for him ; put a plough into it, and it will till for him ; put a harp into it, and it will play for him ; put a pencil into it, and it will paint for him ; put a pen into it, and it will speak for him, plead for him, pray for him. What will it not do? What has it not done? A steam-engine is but a larger hand, made to extend its powers by the little hand of man! An electric telegraph is but a long pen for that little hand to write with! All our huge cannons and other weapons of war, with which we so effectually slay our brethren, are only Cain's hand made bigger, and stronger, and bloodier! What, moreover, is a ship, a railway, a lighthouse, or a palace, — what, indeed, is a whole city, a whole continent of cities, all the cities of the globe, nay, the very globe itself, in so far as man has changed it, but the work of that giant hand, with which

the human race, acting as one mighty man, has executed its will!

When I think of all that man and woman's hand has wrought, from the day when Eve put forth her erring hand to pluck the fruit of the forbidden tree, to that dark hour when the pierced hands of the Saviour of the world were nailed to the predicted tree of shame, and of all that human hands have done of good and evil since, I lift up my hand, and gaze upon it with wonder and awe. What an instrument for good it is! What an instrument for evil! and all the day long it never is idle. There is no implement which it cannot wield, and it should never in working hours be without one. We unwisely restrict the term handicraftsman, or handworker, to the more laborious callings; but it belongs to all honest, earnest men and women, and is a title which each should covet. For the queen's hand there is the sceptre, and for the soldier's hand the sword;

for the carpenter's hand the saw, and for the smith's hand the hammer; for the farmer's hand the plough; for the miner's hand the spade; for the sailor's hand the oar; for the painter's hand the brush; for the sculptor's hand the chisel; for the poet's hand the pen; and for the woman's hand the needle. If none of these or the like will fit us, the felon's chain should be round our wrist, and our hand on the prisoner's crank. But for each willing man and woman there is a tool they may learn to handle; for all there is the command, "Whatsoever thy hand findeth to do, do it with all thy might."

Such are the five entrance-ways of knowledge, which old John Bunyan quaintly styles Eye-gate, Ear-gate, Nose-gate, Mouth-gate, and Feel-gate. Their empire is boundless to the amplest extent that a domain not absolutely infinite can be; and though no future awaited us beyond the grave, and death ensured us a painless passage into anni-

hilation, we should shudder at the approach of him who came to bar for ever the gates of knowledge, and doom us to eternal darkness and eternal silence.

THE END.

cl.

the 1990s, the incidence of *S. flexneri* infections has increased in the United Kingdom [10]. In the United States, *S. flexneri* has been reported as the most common serotype of *S. flexneri* isolated from children with acute colitis [11].

There is a paucity of data on the epidemiology of *S. flexneri* in the United Kingdom. In the 1970s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from patients with acute colitis in the United Kingdom [12]. In the 1980s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from patients with acute colitis in the United Kingdom [13]. In the 1990s, *S. flexneri* was the most commonly isolated serotype of *S. flexneri* from patients with acute colitis in the United Kingdom [14].

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